

a lighting element disposed on the platform, the lighting element having a lighting function and having at least one non-lighting function, and  
at least one processor for controlling the lighting element to provide the lighting function and the non-lighting function, wherein the processor generates a pulse-width-modulated signal to control the lighting function.

3. A device of claim <sup>1</sup>~~2~~, wherein the lighting function is provided by LEDs.

4. A device of claim ~~2~~, wherein the period of the pulse-width-modulated signal is controlled using a duty cycle based on logic of exclusive or.

5. A device of claim 2, wherein the duty cycle is controlled to provide the non-lighting function without visible effect on the lighting function.

6. A device of claim 2, wherein the non-lighting function positions the device.

7. A device of claim 6, further comprising a second non-lighting function, wherein the second non-lighting function comprises a sensing function and wherein positioning the device is in response to a sensed condition sensed by the sensing function.

8. A device of claim 2, wherein the non-lighting function is a sensing function.

9. A device of claim 8, wherein the sensing function is provided by an element selected from the group consisting of a sensor, an IR detector, a camera, a motion detector, a proximity detector, a photovoltaic sensor, a photoconductive sensor, a photodiode, a phototransistor, a photoemissive sensor, a photoelectromagnetic sensor, a microwave receiver, a UV sensor, a magnetic sensor, a magnetoresistive sensor, an ozone sensor, a carbon monoxide sensor, a smoke detector, a position sensor, a thermocouple, a

thermistor, a radiation pyrometer, a radiation thermometer, a fiber optic temperature sensor, a semiconductor temperature sensor, and a resistance temperature detector.

10. A device of claim 2, wherein the non-lighting function is an emitting function.

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11. A device of claim 2, the lighting element further having at least a second non-lighting function selected from the group consisting of a communication function, a positioning function, a sensing function, an actuation function, an emitting function and a networking function.

12. A device of claim 2, further comprising a second device having a lighting function and a non-lighting function and further comprising a communication pathway among at least two such devices.

13. A method of providing multiple functions in a multifunctional device, comprising:  
providing a platform,  
disposing a lighting element on the platform, the lighting element having a lighting function and having at least one non-lighting function,  
providing at least one processor for controlling the lighting element to provide the lighting function and the non-lighting function, and  
generating a pulse-width-modulated signal to control the lighting function.

14. A method of claim 13, further comprising providing at least a second non-lighting function selected from the group consisting of a communication function, a positioning function, a sensing function, an actuation function, an emitting function and a networking function.

15. A multifunctional device, comprising:  
a platform,  
a first element disposed on the platform, the first element having a lighting function,

a second element disposed on the platform, the second element having a non-lighting function, and

at least one processor for controlling the first and second elements, wherein the processor generates a pulse-width-modulated signal to control the lighting function, wherein the lighting function is provided by LEDs, and wherein the period of the pulse-width-modulated signal is controlled using a duty cycle based on logic of exclusive or to provide the non-lighting function without visible effect on the lighting function.

91 16. A method of providing multiple functions with a lighting device, comprising:  
providing a platform,  
disposing a first element on the platform, the first element having a lighting function,  
disposing a second element on the platform, the second element having a non-lighting function, and

providing a processor for controlling the first and second elements, wherein the processor generates a pulse-width-modulated signal to control the lighting function.

116 17. A multifunctional device, comprising:  
a platform,  
a first element disposed on the platform, the first element having a lighting function,  
a second element disposed on the platform, the second element having a non-lighting function,

a third element disposed on the platform, the third element having a non-lighting function different from the function of the second element, and

at least one processor for controlling the first, second and third elements.

117 18. A method of providing a multifunctional device, comprising:  
providing a platform,  
providing first element disposed on the platform, the first element having a lighting function,

providing a second element disposed on the platform, the second element having a non-lighting function,

providing a third element disposed on the platform, the third element having a non-lighting function different from the function of the second element, and

providing at least one processor for controlling the first, second and third elements.

*Cal. May.* <sup>18</sup> 19. A method of claim <sup>17</sup> 18, wherein the first element comprises a plurality of LEDs, wherein the non-lighting function is at least one of a communication function, a sensing function, an emitting function and a positioning function.

<sup>19</sup> 20. A method of claim <sup>18</sup> 19 wherein the processor controls the elements to perform the non-lighting functions without visible effect on the lighting function.